New Hampshire Department of Transportation

Memorial Bridge Replacement

US Route 1 over the Piscataqua River

NHDOT, MaineDOT, HDR, McFarland-Johnson

November 23, 2010

Project Team

- NHDOT – Bob Landry
- NHDOT – Kevin Nyhan
- MaineDOT – Jim Wentworth
- HDR Engineering – Peter Reilly
- McFarland-Johnson – Jed Merrow

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Project Need & Statistics

- Historic Bridge Completed in 1923
- Vital Link for Commerce
- 4,000 navigational lifts per year
- 11,000 vehicles per day
- 1000 +/- pedestrians / cyclists per day
- Memorial Bridge is on the NHDOT Red List of structurally deficient bridges (FSR = 6 of 100)
- NHDOT highest priority bridge project

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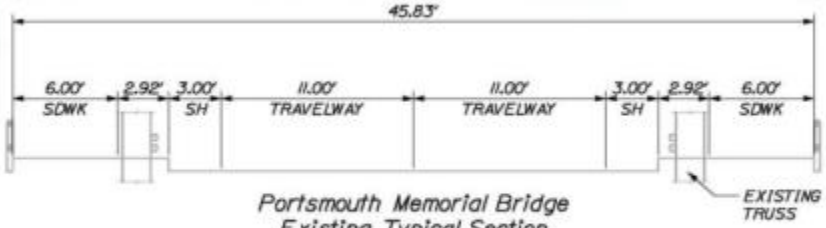
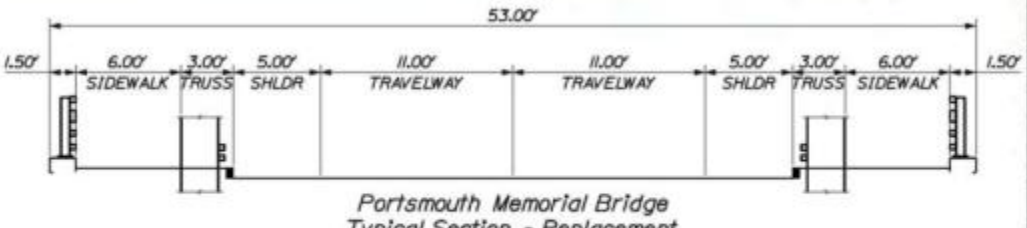
MB 2 (2 Lane Replacement)



Portsmouth Memorial Bridge
Existing Typical Section
2 Travel Lanes



Portsmouth Memorial Bridge
Typical Section - Replacement
2 Travel Lanes

BRIDGE TYPICAL SECTIONS

Project Site *includes 3 bridges*

Portsmouth, NH (south)

Kittery, ME (north)

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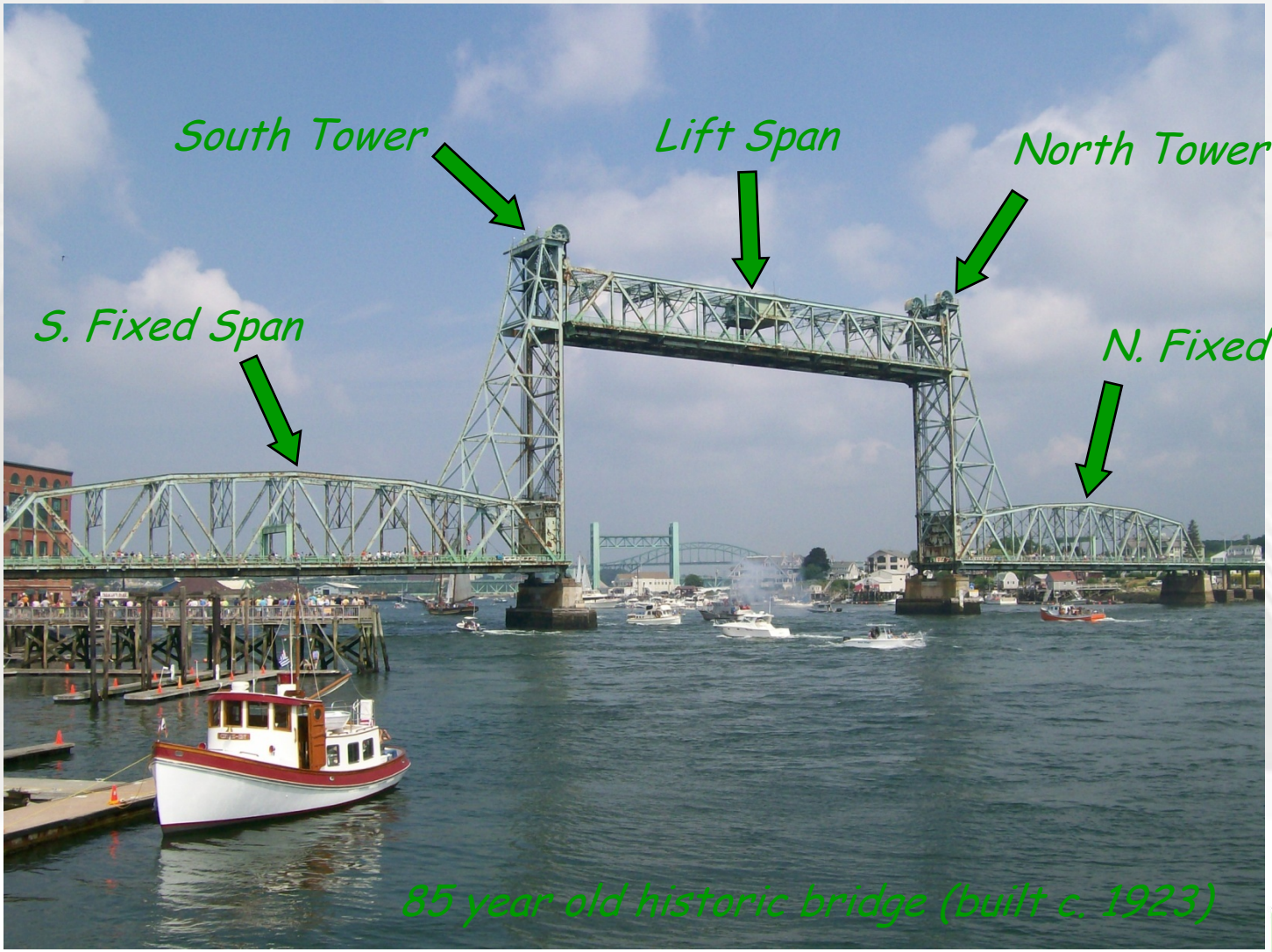
Memorial Bridge

3 spans / vertical lift



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Project Need

- Replace the steel superstructure
- Increase the distance between trusses to allow for a 5-foot shoulder for bicycle passage
- Replace the mechanical and electrical components of the lift span
- Replace the open steel grid with a solid surface deck to improve roadway safety for bicyclists and motorists
- Relocate the operator's control house to address logistical safety concerns with span in raised position
- Repair bridge piers (masonry and timber fenders)
- Replace Abutments

Relocate Control House

Provides for Improved:

- Operator Visibility
- Reliable Access
- Sanitary Facilities

Proposed – South Tower

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New Gate / Storage Houses

Existing

Control House

Gate Tender / Storage House

New Gate Tender's House

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MEMORIAL TO THE SAILORS AND SOLIDERS OF
NEW HAMPSHIRE
WHO PARTICIPATED IN THE WORLD WAR 1917-1919

Scott Avenue Bridge

Complete Replacement (owned by City of Portsmouth)

Project Need:

- Complete replacement required due to advanced deterioration of existing bridge

Removal and replacement work during complete roadway closure phase:

- New 2-span bridge will replace existing 5-span bridge
- Improved roadway geometry
- Improved visibility

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Kittery Approach Spans

Rehabilitation (yet to be determined)

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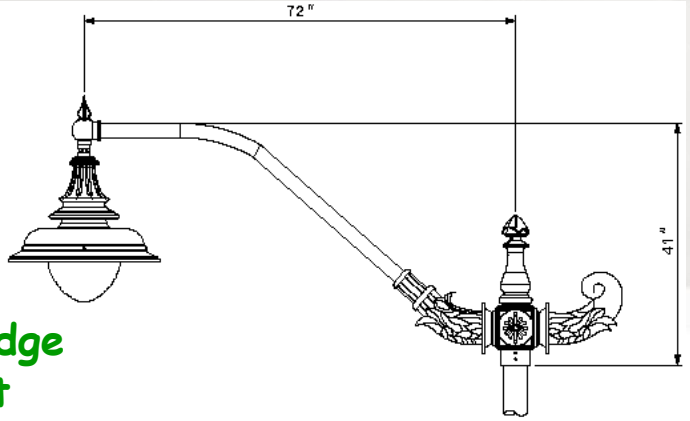
Proposed Project Lighting

Current roadway lighting



ROADWAY LUMINAIRE

Proposed Memorial Bridge lighting – acorn light fixture

Proposed Scott Avenue Bridge lighting

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Plaques

- Memorial plaques, monument, and eagle to be removed to allow painting of structure
- Refurbishing of eagle and monument at Portsmouth end frame
- Refurbishing of memorial plaques on Kittery and Portsmouth end frames, lift span end vertical, and Memorial Park

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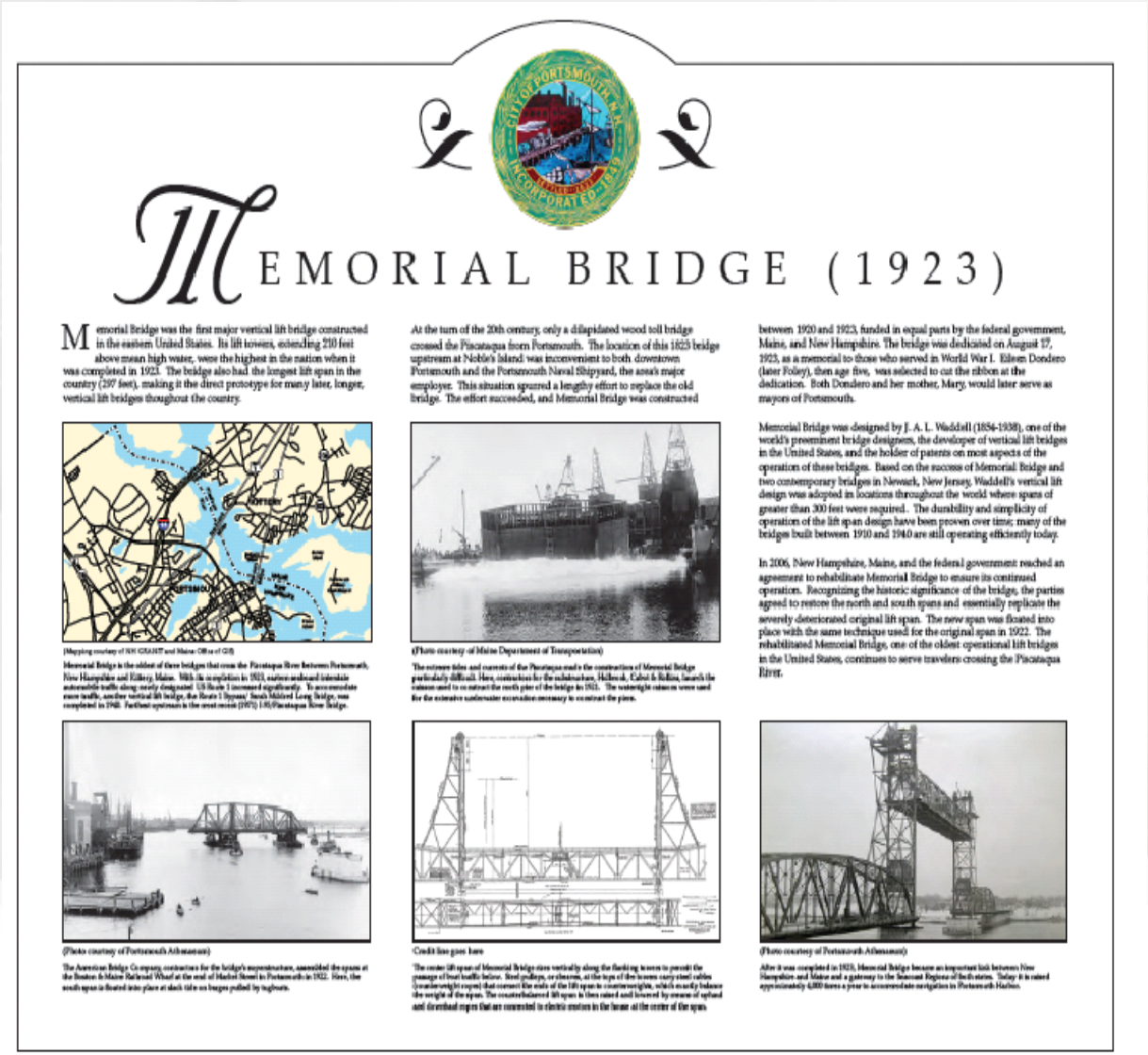
Proposed Project Historic Sign



MEMORIAL BRIDGE (1923)

Memorial Bridge was the first major vertical lift bridge constructed in the eastern United States. Its lift towers, extending 210 feet above mean high water, were the highest in the nation when it was completed in 1923. The bridge also had the longest lift span in the country (297 feet), making it the direct prototype for many later, longer, vertical lift bridges thoughout the country.

At the turn of the 20th century, only a dilapidated wood toll bridge crossed the Piscataqua from Portsmouth. The location of this 1823 bridge upstream at Noble's Island was inconvenient to both downtown Portsmouth and the Portsmouth Naval Shipyard, the area's major employer. This situation spurred a lengthy effort to replace the old bridge. The effort succeeded, and Memorial Bridge was constructed between 1920 and 1923, funded in equal parts by the federal government, Maine, and New Hampshire. The bridge was dedicated on August 17, 1923, as a memorial to those who served in World War I. Eileen Dondero (later Foley), then age five, was selected to cut the ribbon at the dedication. Both Dondero and her mother, Mary, would later serve as mayors of Portsmouth.

Memorial Bridge was designed by J. A. L. Waddell (1854-1938), one of the world's preeminent bridge designers, the developer of vertical lift bridges in the United States, and the holder of patents on most aspects of the operation of these bridges. Based on the success of Memorial Bridge and two contemporary bridges in Newark, New Jersey, Waddell's vertical lift design was adopted in locations throughout the world where spans of greater than 300 feet were required. The durability and simplicity of operation of the lift span design have been proven over time; many of the bridges built between 1910 and 1940 are still operating efficiently today.

In 2006, New Hampshire, Maine, and the federal government reached an agreement to rehabilitate Memorial Bridge to ensure its continued operation. Recognizing the historic significance of the bridge, the parties agreed to restore the north and south spans and essentially replicate the severely deteriorated original lift span. The new span was floated into place with the same technique used for the original span in 1922. The rehabilitated Memorial Bridge, one of the oldest operational lift bridges in the United States, continues to serve travelers crossing the Piscataqua River.

(Photo courtesy of Maine Department of Transportation)

(Photo courtesy of Portsmouth Athenaeum)

(Photo courtesy of Portsmouth Athenaeum)

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Staging Area in Memorial Park

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Design Build Procurement Schedule

- Request for Qualifications (RFQ) – January 2011
- Statement of Qualifications (SOQ) – February 2011
- Selection of Short Listed Design Build Teams – March 2011
- Request for Proposals (Draft RFP) for Industry Review – April 2011
- One-on-One meetings to discuss Draft RFP – May 2011
- Final RFP – June 2011
- Proposals Due – September 2011
- Selection of Design Build Team and Governor and Executive Council Approval – October 2011

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Anticipated Design Build Team Schedule

- Design of Project and Fabrication of Components begins – November 2011
- Bridge Closed for Construction – April 2012
- Bridge Open for Traffic – October 2013
- Incentive / Disincentives included
- Two Navigational Closures (schedule to be determined):
  - Lift span removal and “float-out”: 3 days
  - Lift span “float-in” and installation: 5 days
- Construction Work Hours:
  - Monday through Saturday 7:00 am to 7:00 pm except during Navigational Closures
  - During Navigational Closures work will proceed 24 hours/day until the river is again open for navigation

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Questions / Comments